

Certificate Under 37 C.F.R. 1.101

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PATENTOur Case No. D5216IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Joseph R. Ward et al.

Serial No.: 10/027,071

Filed: December 20, 2001

For: METHOD FOR MANUFACTURE OF
GREY CAST IRON FOR CRANKCASES
AND CYLINDER HEADS

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) Group Art Unit 1725
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) Examiner: Kevin P. Korns
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DECLARATION OF JOSEPH R. WARD
PURSUANT TO 37 C.F.R. 51.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

1. I, Joseph R. Ward, am one of the inventors of this patent application. I graduated from the University of Missouri in 1972 with a Bachelor of Science degree in Metallurgical Engineering. I have worked with metallurgy and casting operations for over 31 years, and I am currently employed with the Indianapolis Casting Corporation with the title of Metallurgist. The Indianapolis Casting Corporation is a wholly owned subsidiary of the International Truck and Engine Corporation, which is the operating entity of Navistar International.

2. I have been given and have studied U.S. Patent No. 3,299,482, issued to Mr. Tache, and U.S. Patent No. 4,493,354, issued to Messrs. Bostater, MacGregor and Geacki.

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These patents, I understand, have been identified by the Patent Examiner as indicating that the invention of this patent application is not patentable.

3. The invention of this patent application is a method of casting with a grey iron that is not taught by the Tache and Bostater et al. patents. In our method, very low levels of carbide stabilizers, such as chromium and phosphorus, and a low level of tin are used in a molten grey iron casting metal, which is inoculated with silicon to a level of about 0.10% to about 0.12% while it is in the pouring ladle, and poured as soon as possible after inoculation, and the castings are shaken out while they are hot, in excess of 1400°F. Our invention provides castings with high strength and minimal iron carbide hard spots and chills, low residual stresses in reduced casting times and without additional equipment.

4. The Tache patent does not teach our method. The Tache patent does not teach the use of low levels of carbide stabilizers, reduced casting times and hot casting shake out. To the contrary, Tache's castings remain in the molds such long times that Tache adds tin to stabilize the hardness of the casting, and Tache does not teach inoculation of a molten grey iron to a further silicon content of about 0.10% to about 0.12% silicon, pouring as soon as possible after inoculation, and shaking out the castings while they are over 1400°F. In addition, Tache uses high levels of chromium and phosphorus, both of which promote hard spots in castings.

5. The Bostater et al. patent is also not significant to our invention. It appears that the Examiner has referred to the Bostater et al. patent only because it discloses inoculation of a grey iron metal with a ferrosilicon inoculant. Inoculation with silicon containing inoculants has been done for years and is a common foundry practice. However, in the method of our invention, molten grey iron casting metal with very low levels of carbide stabilizers and tin, is inoculated to provide a further silicon addition of 0.10% to 0.12% by weight, is poured into the molds as soon as possible after inoculation, and the resulting castings are shaken out of the mold while they are over 1400°F. The Bostater et al. patent does not teach these steps. The Bostater et al. patent is concerned with obtaining fluidity of the molten casting metal by maintaining it in a holding furnace for at least one and one half hours so the molten metal will satisfactorily form thin walls in an engine block casting. Unlike our invention, which requires no new equipment, the Bostater et al. patent also indicates that its disclosed process requires a holding furnace of massively increased capacity.

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6. I do not believe the combined teachings of the Tache patent and Bostater et al. patent teach our casting method. The combined teachings of the Tache and Bostater et al. patents do not teach a casting method in which a molten grey iron with very low levels of carbide stabilizers and a low level of tin is inoculated with silicon to a level of about 0.10% to about 0.12%, is poured as soon as possible after inoculation, and in which the resulting castings are removed from the molds at over 1400°F. Furthermore, I do not believe a skilled metallurgist, trying to develop castings with high strength, minimal iron carbide hard spots and chills, low residual stresses in reduced casting times and without additional equipment, would combine the teachings of the Tache patent and the Bostater et al. patent, whose teachings are directed to different problems.

Joseph R. Ward further declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application and patent resulting therefrom.

Declared at INDIANAPOLIS IN, this 13th day of AUGUST, 2003.

Dated: 08/13/03

Joseph R. Ward
(Signature)

Printed: Joseph R. Ward

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